Picea glauca - Abies balsamea / Acer spicatum / Rubus pubescens Forest (Spruce - Fir / Mountain Maple Forest)

COMMON NAME	White Spruce - Balsam Fir / Mountain Maple / Dwarf Blackberry Forest
SYNONYM	Spruce - Fir / Mountain Maple Forest
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Evergreen forest (I.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar needle-leaved evergreen forest (I.A.8)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.A.8.N)
FORMATION	Conical-crowned temperate or subpolar needle-leaved evergreen forest (I.A.8.N.c)
ALLIANCE	PICEA GLAUCA - ABIES BALSAMEA FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM TERRESTRIAL

RANGE

Voyageurs National Park

This type most commonly occurs on gentle to moderate slopes above wetlands and lake shores throughout the park.

Globally

This community is found in northern Michigan, northern Wisconsin, northern Minnesota, northwestern Ontario, and Manitoba. It may be found elsewhere in Canada.

ENVIRONMENTAL DESCRIPTION

Voyageurs National Park

This type most commonly occurs on gentle to moderate slopes above beaver ponds and lake shores. Aspects are variable. Coarse woody debris is often abundant. Soils are generally rocky, 3-15 cm deep sandy loams. These sites are well to moderately well drained.

Globally

This community is found primarily on dry-mesic to mesic sites with well-drained, deep (>60 cm) loamy, sandy, or silty soils (Sims *et al.* 1989, Zoladeski *et al.* 1995). Less commonly, it may be found on wetter sites that may approach seasonally saturated conditions (Maycock 1961). The soils have little organic content and the topography is flat to gently sloping.

MOST ABUNDANT SPECIES

Voyageurs National Park

Stratum	Species
Tree canopy	*Picea glauca, Abies balsamea*
Tall shrub	*Abies balsamea, Corylus cornuta, Populus tremuloides*
Short shrub	*Vaccinium angustifolium*
Forb	*Aster macrophyllus, Aralia nudicaulis, Cornus canadensis*
Fern	*Pteridium aquilinum*
Nonvascular	*Pleurozium schreberi*

Globally

Stratum	Species
Tree canopy	*Picea glauca, Abies balsamea*
Tall shrub	*Abies balsamea, Corylus cornuta, Populus tremuloides*
Short shrub	*Vaccinium angustifolium*
Forb	*Aster macrophyllus, Aralia nudicaulis, Cornus canadensis*
Fern	*Pteridium aquilinum*
Nonvascular	*Pleurozium schreberi*

CHARACTERISTIC SPECIES

Voyageurs National Park

Picea glauca, Abies balsamea, Corylus cornuta, Aster macrophyllus

Globally
Picea glauca, Abies balsamea, Acer spicatum, Rubus pubescens

VEGETATION DESCRIPTION
Voyageurs National Park
The canopy of this community is typically fairly open (40-70%) and composed predominantly of *Picea glauca* and *Abies balsamea* with lesser amounts of *Picea mariana* occasionally present. Deciduous trees, especially *Betula papyrifera* and *Populus tremuloides* may be present in the canopy with less than 25% relative cover. A shrub layer of *Abies balsamea, Corylus cornuta,* and/or *Populus tremuloides* is almost always present. Cover of the shrub layer is highly variable and inversely proportional to canopy cover. A dwarf-shrub layer of *Vaccinium angustifolium* may be absent or present at low cover. Like the shrub strata, density of the herbaceous layer is highly variable, ranging from 10-80%. The most abundant species are *Aster macrophyllus, Pteridium aquilinum, Aralia nudicaulis,* and *Cornus canadensis*. A moss layer of *Pleurozium schreberi* may be absent or present up to 40% cover.

Globally
This community is a closed canopy forest dominated by a combination of *Picea glauca* and/or *Abies balsamea*. Some stands have a preponderance of one of these species, with the other an important associate. Typically *Picea glauca* is the more abundant (Maycock and Curtis 1960, MN NHP 1993). Common associates include *Acer rubrum, Betula papyrifera, Picea mariana, Pinus banksiana, Populus tremuloides*, and *Populus balsamifera*. There is usually a prominent shrub/sapling layer containing *Abies balsamea, Acer spicatum, Corylus cornuta, Diervilla lonicera, Lonicera canadensis, Picea glauca, Rosa acicularis*, *Rubus pubescens*, and *Sorbus americana*. The herbaceous layer is often moderately sparse, with species such as *Anemone quinquefolia, Aralia nudicaulis, Aster macrophyllus, Clintonia borealis, Coptis trifolia, Cornus canadensis, Dryopteris carthusiana, Maianthemum canadense, Mitella nuda, Trientalis borealis, Vaccinium myrtilloides*, and (eastward) *Viburnum cassinoides*. Mosses include *Dicranum polystem, Pleurozium schreberi, Ptilium crista-castrensis,* and *Rhytidiadelphus triquetrus* (Sims *et al.* 1989, Chambers *et al.* 1997).

CONSERVATION RANK G4G5.

DATABASE CODE CEGL002446

COMMENTS
Voyageurs National Park
Diagnostic features of the type include the canopy of *Picea glauca* and *Picea mariana* or *Abies balsamea*, with less than 25% cover of deciduous trees. When deciduous trees, especially *Betula papyrifera* and *Populus* spp., are present in the canopy with about 25% cover, this type grades into the Spruce-Fir-Aspen Forest. In stands where beaver and spruce budworm have taken most of the trees, this type can grade into the Boreal Hazelnut-Serviceberry Rocky Shrubland. This shrubland, however, must have less than 25% cover of trees. If open bedrock is present in the stand, there must be less than 60% cover of spruce-fir and canopy closure must be prevented by the exposed bedrock for the stand to be considered a Boreal Pine Rocky Woodland type.

Stands of this type are often located above beaver ponds and adjacent to lakes and, therefore, subject to beaver feeding. In many circumstances, the open canopy of these stands is the result of beavers removing the deciduous trees (in what may have been, for example, a Spruce-Fir-Aspen Forest). *Abies balsamea* is also subject to defoliation by the Spruce Budworm.

Globally
In Northern Minnesota, stands of this type are often located above beaver ponds and adjacent to lakes and, therefore, subject to beaver feeding. In many circumstances, the open canopy of these stands is the result of beavers removing the deciduous trees (in what may have been, for example, a Spruce-Fir-Aspen Forest). *Abies balsamea* is also subject to defoliation by the Spruce Budworm (M. Smith personal communication 1999).

REFERENCES
Chambers, B.A., B.J. Naylor, J. Nieppola, B. Merchant, P. Uhlig. Field Guide to Forest Ecosystems of Central Ontario. Southcentral Science Section (SCSS) Field Guide FG-01, Ontario Ministry of Natural Resources, North Bay, Ontario, Canada. 200 pp.

La Roi, G. H. 1967. Ecological studies in the boreal spruce-fir forests of the North American taiga. I. Analysis of the vascular flora. Ecological Monographs. 37(3):229-253.

Maycock, P. F. 1961. The spruce-fir forest of the Keweenaw Peninsula, Northern Michigan. Ecology. 42(2):357-365.

Maycock, P. F. and J. T. Curtis. 1960. Ecological Monographs. 30(1):1-35.

Minnesota Natural Heritage Program. 1993. Minnesota's native vegetation: A key to natural communities. Ver. 1.5. Minn. Dep. Nat. Resour., Nat. Heritage Prog. St. Paul, Minn. 110 p.

Sims, R. A., W. D. Towill, K. A. Baldwin, and G. M. Wickware. 1989. Field guide to the forest ecosystem classification for northwestern Ontario. Ontario Ministry of Natural Resources.

Zoladeski, C. A., G. M. Wickware, R. J. Delorme, R. A. Sims, and I. G. W. Corns. 1995. Forest ecosystem classification for Manitoba: field guide. Natural Resources Canada, Canadian Forest Service, Northwest Region, Northern Forestry Center, Edmonton, Alberta. Special Report 2.